

Cell 3

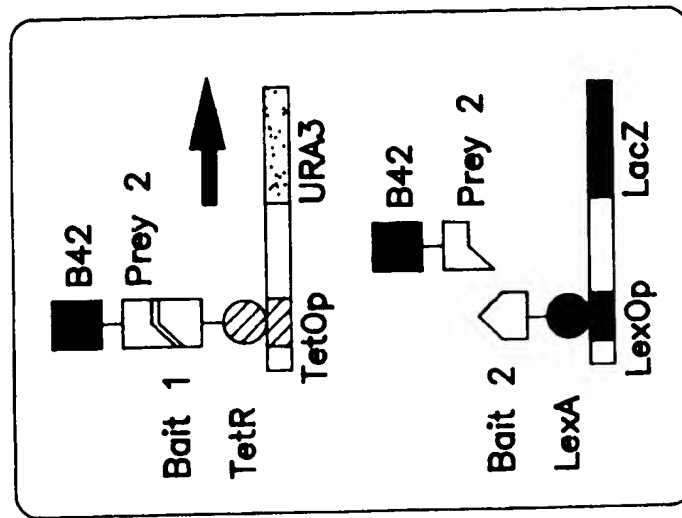


FIG. 1C

Cell 2

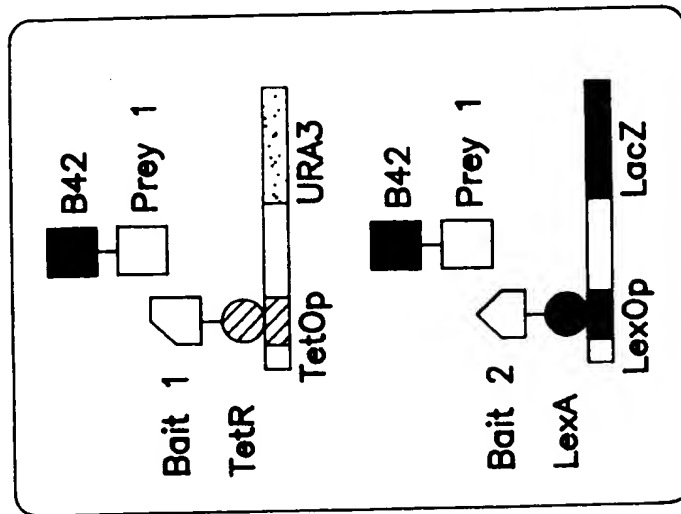


FIG. 1B

Cell 1

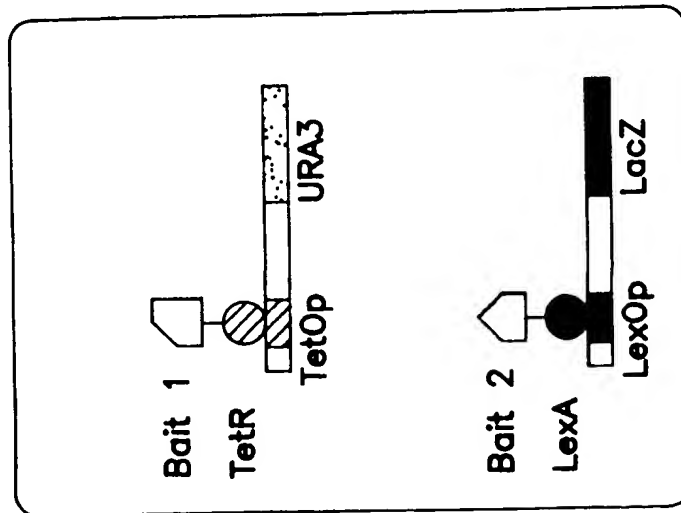


FIG. 1A

1235 4

Baits	Prey	Reporter	Reporter Output		Logical Relationship				
			<table border="1"> <tr> <td>X-Gal Glu</td> <td>X-Gal Gal</td> </tr> <tr> <td>URA- Glu</td> <td>URA- Gal</td> </tr> </table>	X-Gal Glu	X-Gal Gal	URA- Glu	URA- Gal		
X-Gal Glu	X-Gal Gal								
URA- Glu	URA- Gal								
LexA-hSos1	B42-Ros B42	LexOp-LacZ			And				
TetR-c-Raf1	B42-Ros B42	TetOp-URA3							
LexA-Max	B42-c-Raf1 B42-Mxi1	LexOp-LacZ			Ls1				
TetR-RosV12	B42-c-Raf1 B42Mxi1	TetOp-URA3			Ls2				
LexA-RosV12	B42-c-Raf1 B42-Cdc25	LexOp-LacZ			Ls1				
TetR-RosA15	B42-c-Raf1 B42-Cdc25	TetOp-URA3			Ls2				

FIG. 2

425 4



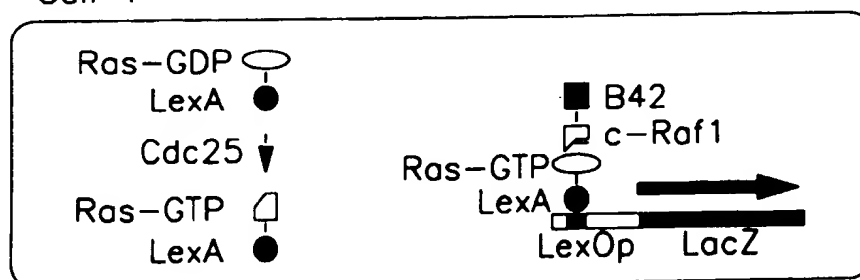
Cell	LacZ Output	$\beta$ -Galactosidase Activity
1		$22.6 \pm 3.3$
2		$7.4 \pm 1.0$

FIG. 3A

Cell 1



Cell 2

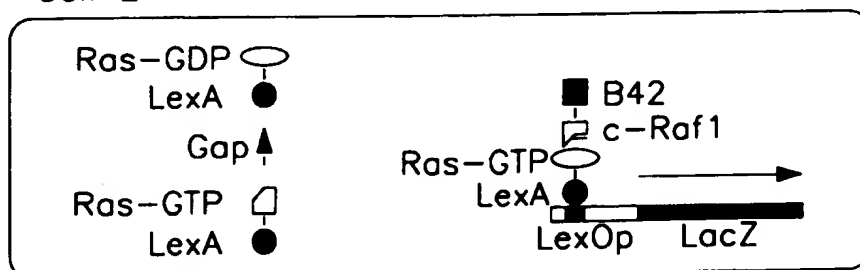


FIG. 3B

Input Values		LacZ Output
1(B42-c-Raf1)	0(GAP)	0
1(B42-c-Raf1)	1(Cdc25)	1

FIG. 3C

# Logical Not

$\alpha$  factor = 0  
 TGF- $\beta$  = 1  
 Input  $\alpha$ -factor, output TGF- $\beta$   
 Input TGF- $\beta$ , output  $\alpha$  factor

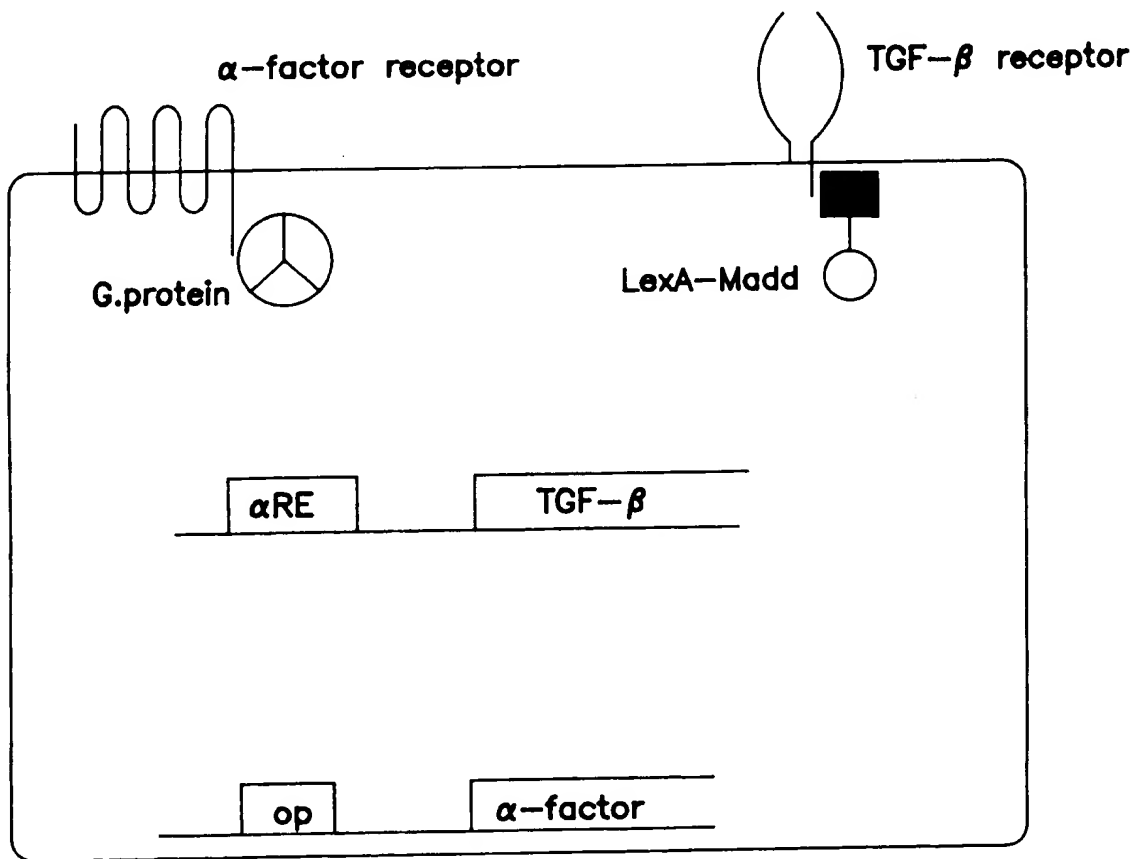


FIG. 4

Receptors  
 $\alpha$  factor R  
 TGF- $\beta$  R  
 Notch  
 Bradykinin R

Inputs  
 $\alpha$  factor  
 TGF- $\beta$   
 Delta  
 Bradykinin

Four input output channels  
 (variety of possible  
 logical operations)

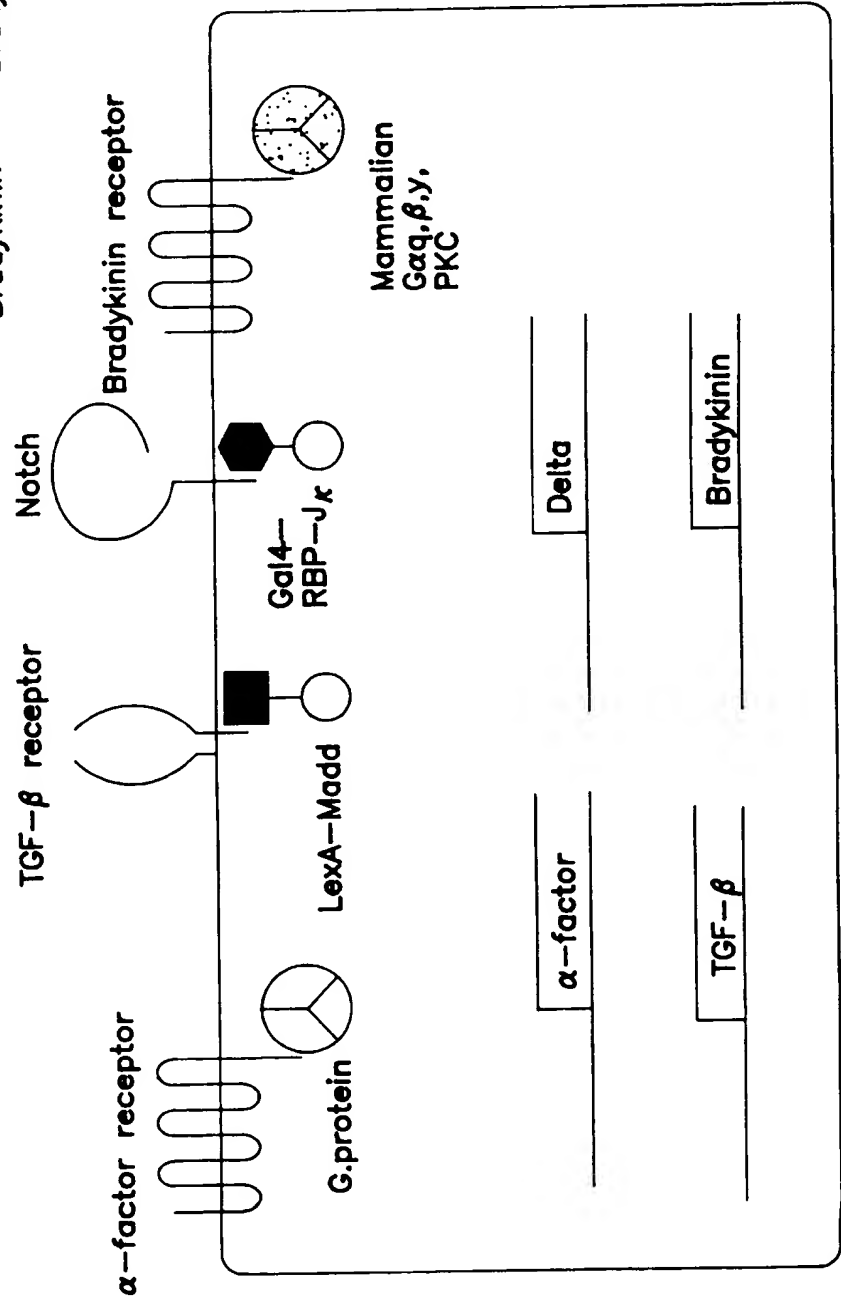


FIG. 5

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# Fluorescence resonance energy transfer "transistor"

No green light input  
HIV protease linker intact  
Blue light input  
Green light output

Green light input  
Linker cleaved  
Blue light input  
No green fluorescence

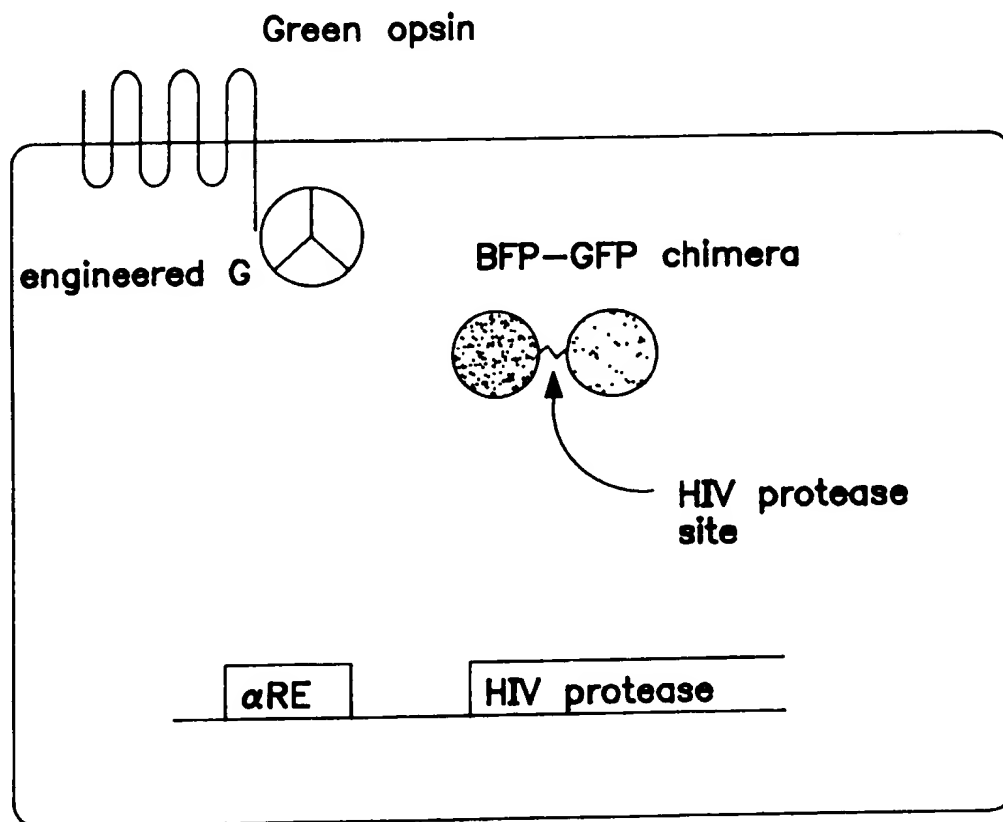


FIG. 6